

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today
(1) was not written for publication in a law journal and
(2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SYED V. AHAMED
and VICTOR B. LAWRENCE

Appeal No. 96-1492
Application 07/666,162¹

ON BRIEF

Before URYNOWICZ, THOMAS and JERRY SMITH, Administrative
Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134
from the examiner's rejection of claims 1, 2, 4, 5, 8, 10, 11,
13, 14 and 17-36. Claims 3, 6, 7, 9, 12, 15 and 16 have been

¹ Application for patent filed March 7, 1991.

indicated as containing allowable subject matter.

The disclosed invention pertains to a multiprocessor system which combines advantages of synchronous and asynchronous operation. Tasks are divided into subtasks and are assigned to a plurality of processors in sizes which are related to the operating rates of the individual processors.

Representative claim 1 is reproduced as follows:

1. A multiprocessor system comprising:

a plurality of processors operating in parallel and all operating synchronously with each other, at least some of the processors each operating to process a task at a different rate so that each processor of the at least some of the processors processes the task in a different amount of time than the other processors;

first means connected to the plurality of processors, for receiving a task comprising a sequence of a plurality of subtasks and distributing portions of the received task to individual ones of the processors for processing, each portion comprising at least one subtask and the subtasks of each portion being sequential in said sequence, the portions being directly proportional in size to the operating rates of the individual processors so that each individual processor processes the portion of the task that is distributed to the individual processor in a same amount of time as the other processors process the portions distributed to them, the first means distributing sequential said portions to the plurality of processors in inverse order of the operating rates of the processors such that the processor having a lowest operating rate receives a first sequential one of the portions and the

Appeal No. 96-1492
Application 07/666,162

processor having a highest operating rate receives a last sequential one of the portions; and

second means connected to the plurality of processors, for outputting results of the processing.

The examiner relies on the following references:

Liu et al. (Liu)	5,031,089	July 09, 1991
		(filed Dec. 30,
1988)		

Natarajan	5,146,540	Sep. 08, 1992
	(effectively filed Feb. 22,	
1990)		

Claims 1, 2, 4, 5, 8, 10, 11, 13, 14 and 17-36 stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Liu in view of Natarajan.

Rather than repeat the arguments of appellants or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the examiner and the evidence of obviousness relied upon by the examiner as support

Appeal No. 96-1492
Application 07/666,162

for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the briefs along with the examiner's rationale in support of the rejection and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 1, 2, 4, 5, 8, 10, 11, 13, 14 and 17-36. Accordingly, we reverse.

Appellants have indicated that for purposes of this appeal the claims will stand or fall together in the following two groups: Group I has claims 1, 2, 4, 5, 8, 10, 11, 13, 14, 17-22, 25, 28, 31 and 34, and Group II has claims 23, 24, 26, 27, 29, 30, 32, 33, 35 and 36. Consistent with this indication appellants have made no separate arguments with respect to any of the claims within each group. Accordingly, all the claims within each group will stand or fall together.
Note In re King,

Appeal No. 96-1492
Application 07/666,162

801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983).

Therefore, we will only consider the rejection against claims 1 and 23 as representative of all the claims on appeal.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (CCPA 1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657,

Appeal No. 96-1492
Application 07/666,162

664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

With respect to representative, independent claim 1, the examiner basically asserts that Liu teaches the invention of claim 1 except for the recitation that each processor processes the portion of the task distributed to it in the same amount of time as the other processors process their distributed portions, and the recitation that the subtasks are allocated in inverse order such that the processor having the lowest processing rate receives the first task portion and the processor having the highest processing rate receives the last task portion [answer, pages 3-6]. Natarajan is cited by the examiner as teaching an allocation system in which tasks are allocated among a plurality of processors such that all processors finish at substantially the same time. The

examiner asserts that it would have been obvious to allocate tasks in Liu using the distribution approach of Natarajan to increase the speed of Liu's system. The examiner also observes that the order of task distribution has no effect on the operation of the system so that it would have been an obvious design choice to distribute tasks in the reverse order as claimed. Appellants make several arguments in support of alleged errors made by the examiner in consideration of the applied references.

At the outset, we are of the view that the task allocation techniques of Liu and Natarajan are so opposed to each other that the rationale for combining their teachings could only come from an improper hindsight reconstruction of the invention by the examiner. Liu is specifically directed to a decentralized system whereas Natarajan and the claimed invention are directed to a centralized system in which a first means assigns tasks to the plurality of processors. Tasks in Liu are assigned at the request of processors which are being underutilized. Tasks are then reassigned based on interprocessor communication of respective workloads. Thus,

Appeal No. 96-1492
Application 07/666,162

Liu allocates tasks using a completely different methodology from Natarajan or the claimed invention. Natarajan is similar to the claimed invention in that it uses a centralized system to assign tasks based on equalizing the time to perform tasks by processors operating in parallel. The strategies of Natarajan and Liu could not be combined into a single system without destroying the main benefit set forth in each of the respective disclosures. Therefore, we find no basis in the applied prior art to combine their teachings in the manner proposed by the examiner.

Appellants' argument that the order of assigning tasks to the processors is not a mere design choice is also well-taken. The output frames of the disclosed invention can only become available at substantially the same time if they are distributed in the manner recited in claim 1. Any other order would delay the time at which the output frames are available for use by subsequent processing. This is a question of obviousness which has not been addressed by the examiner. The examiner's finding

Appeal No. 96-1492
Application 07/666,162

of the distribution order being a design choice is not supported by the record.

The arguments by appellants and the examiner as to whether Liu and Natarajan are synchronous or asynchronous systems also fail to properly address the requirements for a rejection under 35 U.S.C. § 103. Neither the examiner nor appellants address the question of whether the synchronous operation of the plurality of processors recited in claim 1 would have been obvious over the teachings of Liu and/or Natarajan. There are only two modes of operation, synchronous and asynchronous. Simply establishing that a reference is one or the other does not address the obviousness of the recitation of synchronous operation. Notwithstanding the failure of the examiner and appellants to properly consider issues of obviousness, the examiner's assertions regarding the synchronous operation of Liu and Natarajan are unsupported by the references.

For all the reasons just discussed, the examiner's rejection of representative claim 1 is not supported by the applied prior art. Therefore, we do not sustain the rejection

Appeal No. 96-1492
Application 07/666,162

of claim 1 and the other claims which are grouped therewith.
Since all of the claims of Group II are dependent claims which
depend

from at least one claim from Group I, we also do not sustain
the rejection of any of the claims of Group II.

In summary, the decision of the examiner rejecting
claims 1, 2, 4, 5, 8, 10, 11, 13, 14 and 17-36 is reversed.

REVERSED

	STANLEY M. URYNOWICZ, JR.)	
	Administrative Patent Judge)	
)	
)	
	JAMES D. THOMAS)	BOARD OF
PATENT)	
	Administrative Patent Judge)	APPEALS AND
)	INTERFERENCES
)	
	JERRY SMITH)	
	Administrative Patent Judge)	

Appeal No. 96-1492
Application 07/666,162

JS/cam

Appeal No. 96-1492
Application 07/666,162

S. H. Dworetsky
AT & T Bell Laboratories
600 Mountain Avenue Room 3C-512
P. O. Box 636
Murray Hill, NJ 07974-3647